

# North American Traffic Monitoring Exhibition and Conference

VMT Estimates - Getting Better or Worse

## MPO Perspective

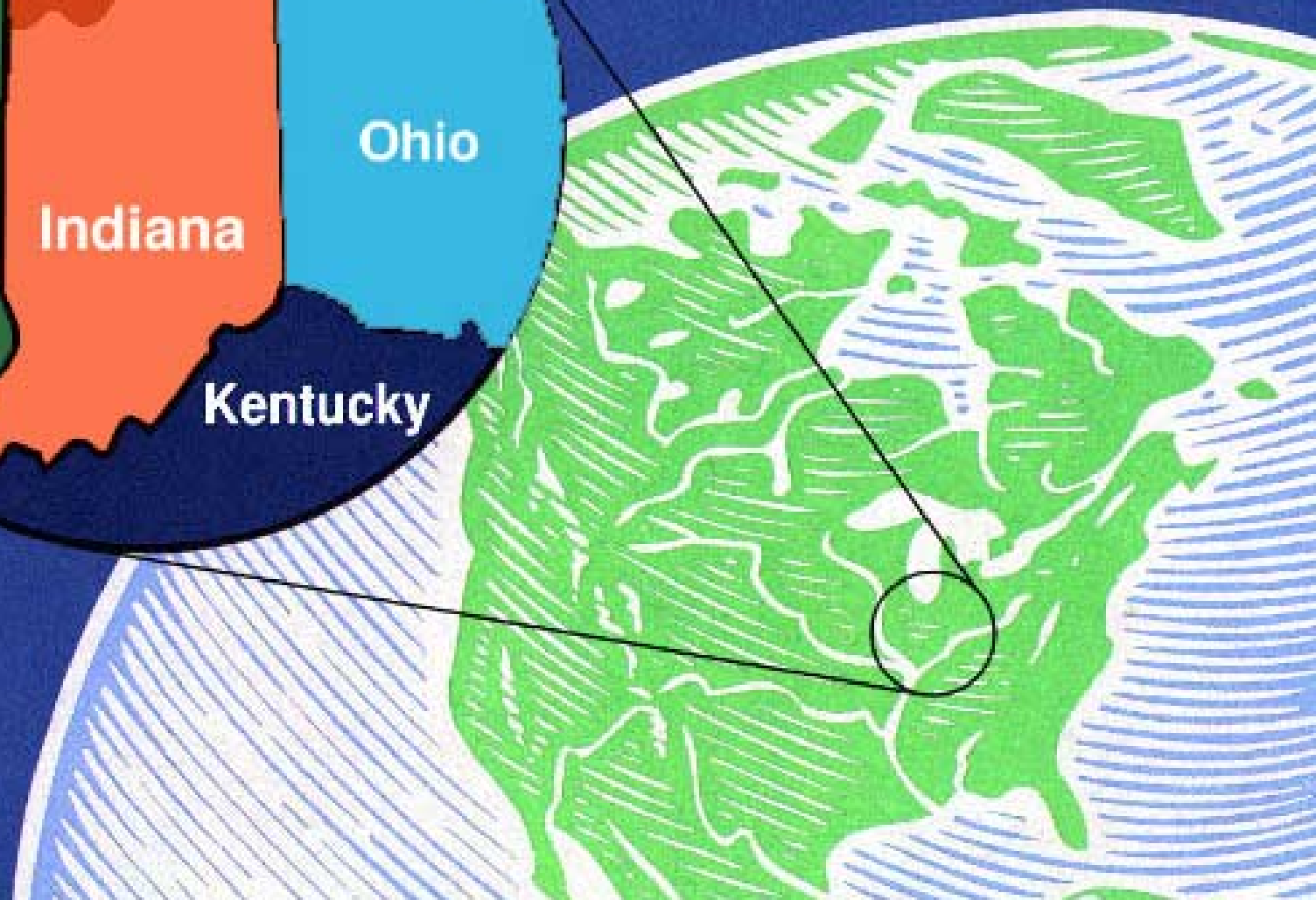
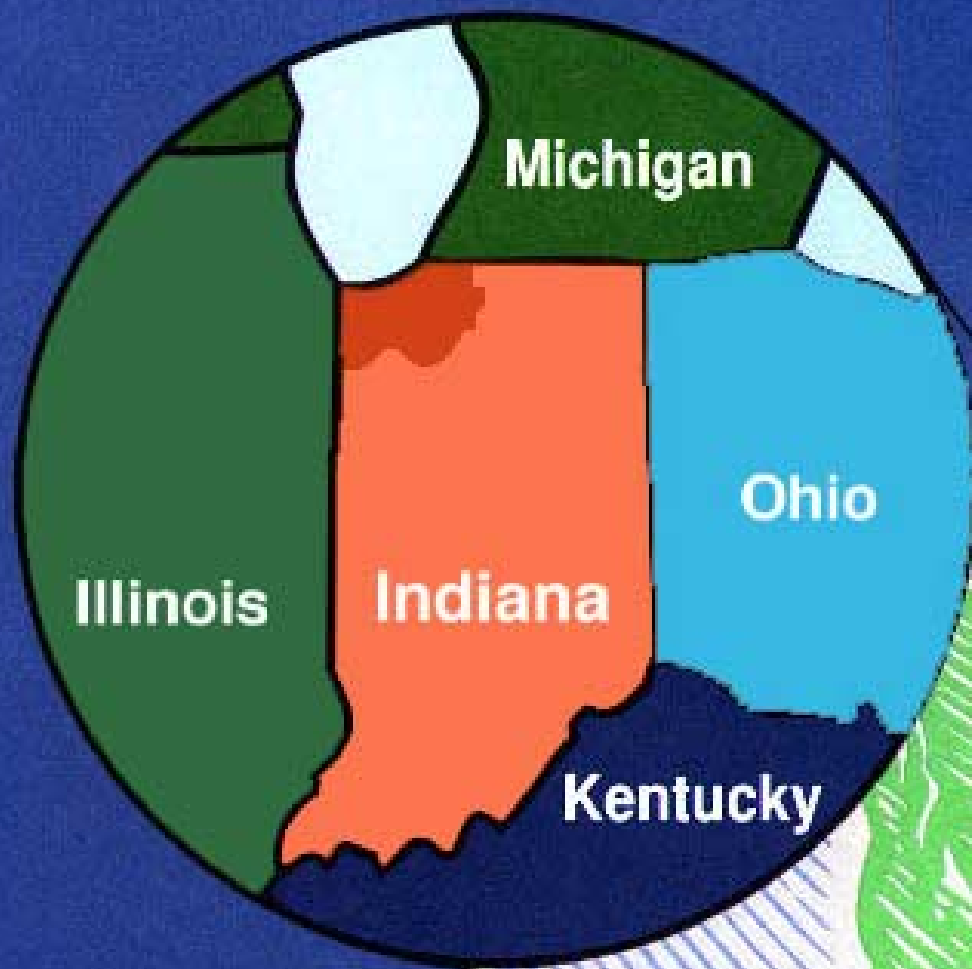
NIRPC

Northwestern Indiana Regional Planning Commission

Are VMT estimates getting better or worse?



I don't know.

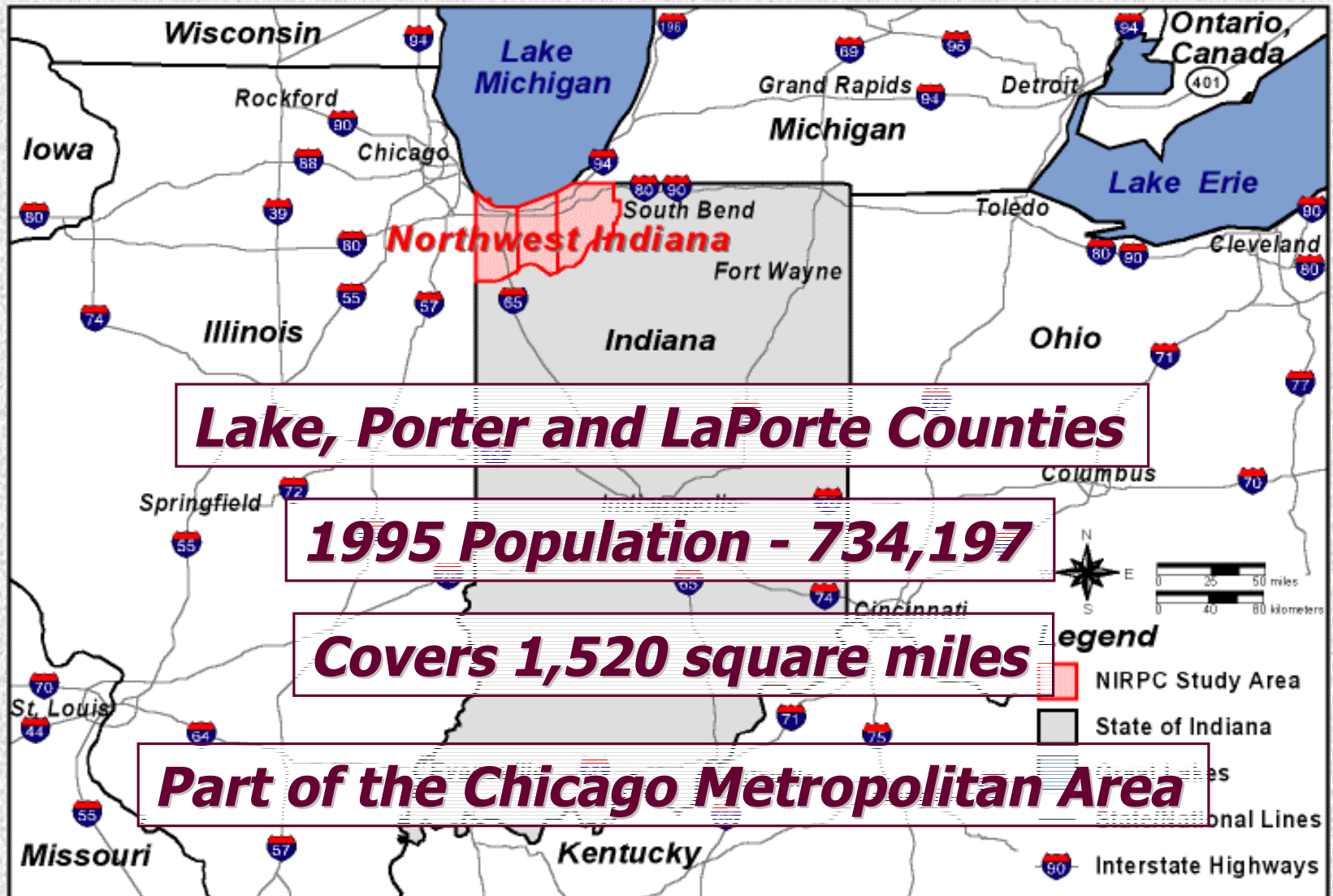




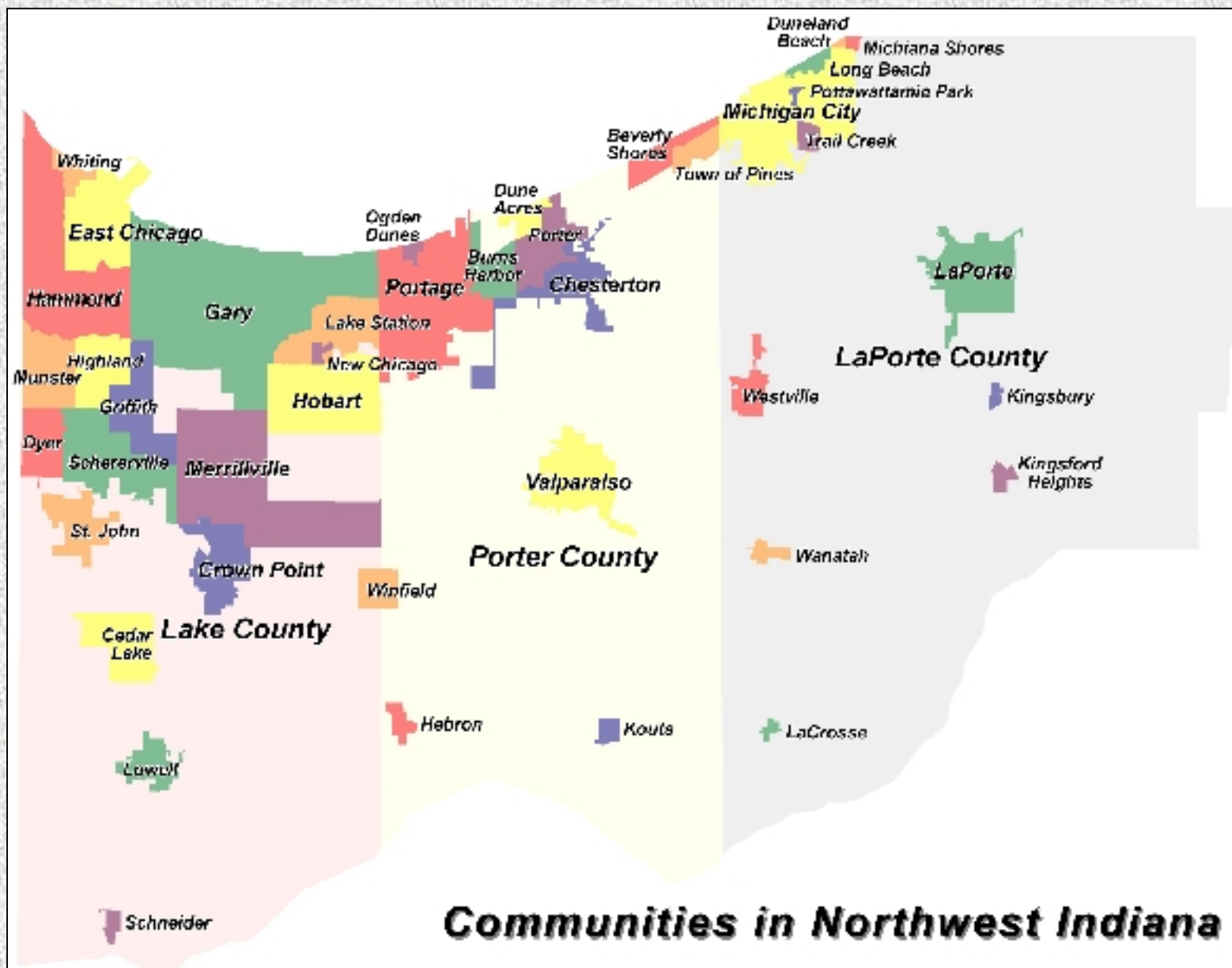
# **What is NIRPC?**

- NIRPC was originally established as the Lake-Porter County Regional Transportation and Planning Commission in 1965 pursuant to State enabling legislation
- NIRPC coordinates regional planning in three domains:
  - Transportation
  - Environmental
  - Community and Economic Development
- One of the most important designations NIRPC has received is that of Metropolitan Planning Organization (MPO) for northwestern Indiana
- NIRPC operates as a cooperative of local governments representing the 41 towns and cities and 3 counties of northwest Indiana

# The Northwest Indiana Region







# **Why does the MPO care about VMT?**

Validation of Travel Demand Model.

Performance measure in plan evaluation.

Important element in air quality analysis.



# **Travel Demand Model**

Important tool used to evaluate proposed transportation improvements.

“Travel demand modeling involves a series of mathematical models that attempt to simulate human travel behavior.”

E. Beimborn, Professor UW-Milwaukee

# **The Four Step Process**

Trip Generation

Trip Distribution

Mode Choice

Traffic Assignment



## **Travel model outputs include:**

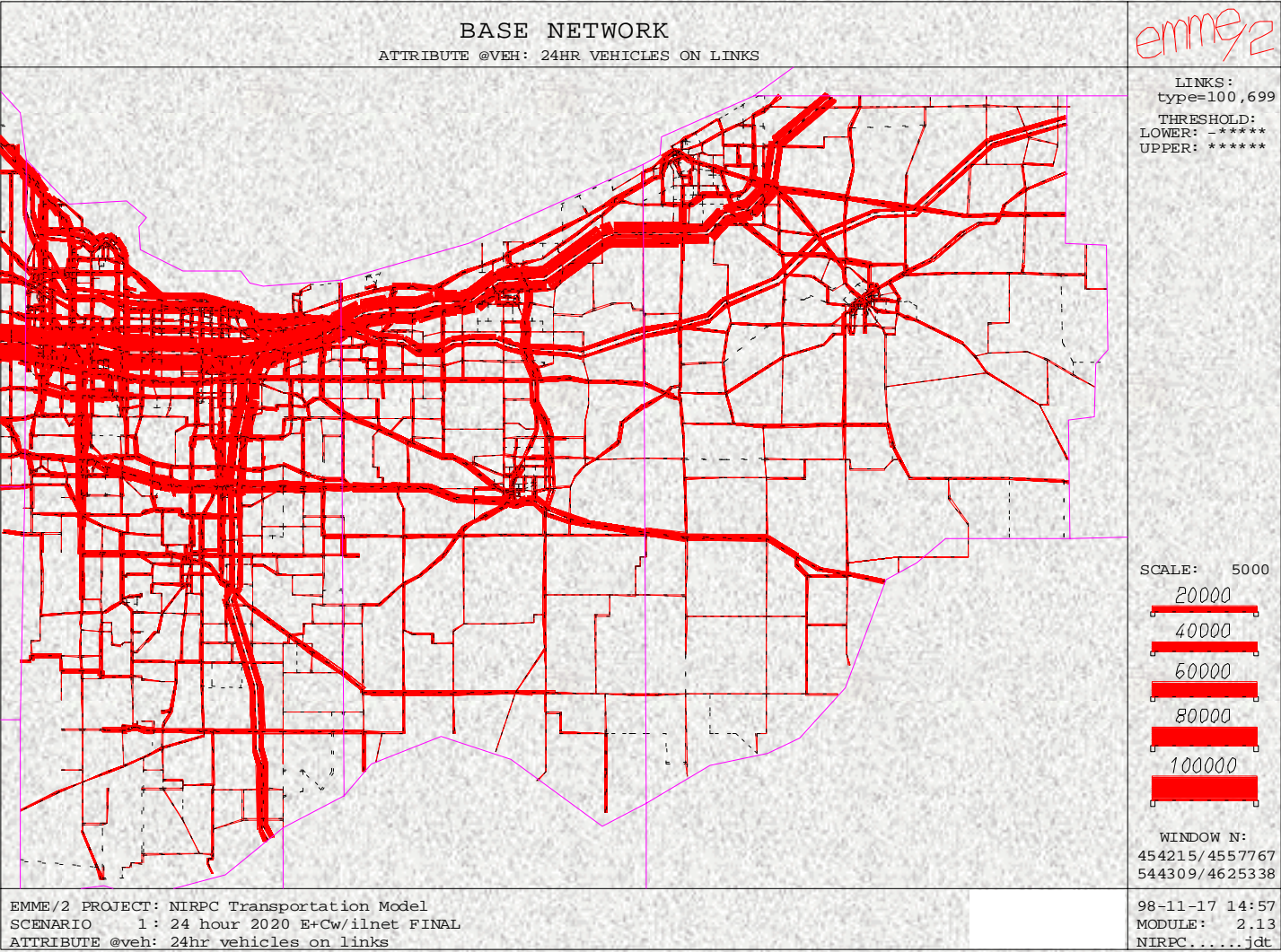
Traffic volumes

Levels of congestion

Travel times

Speed

Vehicle miles of travel (VMT)





## **Calibrate and Validate**

Check how well the assumptions, constants, and values fit local condition.

Each step in the model is calibrated.

Validation tests the calibrated models with base year data and compares results to ground counts.

## **Validation includes:**

Comparison of model results with ground counts.

By volume range.

By cordon line.

By cut lines.

At key locations.

VMT by area type and functional classification.

Transit ridership.



# NIRPC Travel Model - VMT Validation Results

## *Miles of Roadway*

Area Type	Functional Classification	HPMS			Model			Total HPMS Miles	Total Model Miles	Difference	Percent Difference
		Miles Lake	Miles LaPorte	Miles Porter	Miles Lake	Miles LaPorte	Miles Porter				
Urban	Interstate	130.00	0.00	34.66	124.36	0.00	35.71	164.66	160.07	-4.59	-2.8%
	Princ. Arterial	277.78	103.50	123.32	261.05	106.15	117.25	504.60	484.45	-20.15	-4.0%
	Minor Arterial	459.84	107.96	119.20	450.69	109.23	125.79	687.00	685.71	-1.29	-0.2%
	Collector	485.82	103.36	193.00	524.70	114.70	201.77	782.18	841.17	58.99	7.5%
	<b>Total Urban</b>	<b>1,353.44</b>	<b>314.82</b>	<b>470.18</b>	<b>1,360.80</b>	<b>330.08</b>	<b>480.52</b>	<b>2,138.44</b>	<b>2,171.40</b>	<b>32.96</b>	<b>1.5%</b>
Rural	Interstate	31.48	75.58	29.66	31.09	73.79	26.92	136.72	131.80	-4.92	-3.6%
	Princ. Arterial	33.32	73.02	26.74	32.16	78.90	26.94	133.08	138.00	4.92	3.7%
	Minor Arterial	20.34	119.18	59.14	27.39	130.53	77.17	198.66	235.09	36.43	18.3%
	Collector	232.80	587.50	440.52	394.01	568.26	384.06	1,260.82	1,346.33	85.51	6.8%
	<b>Total Rural</b>	<b>317.94</b>	<b>855.28</b>	<b>556.06</b>	<b>484.65</b>	<b>851.48</b>	<b>515.09</b>	<b>1,729.28</b>	<b>1,851.22</b>	<b>121.94</b>	<b>7.1%</b>
<b>Total</b>		<b>1,671.00</b>	<b>1,170.00</b>	<b>1,026.00</b>	<b>1,845.00</b>	<b>1,182.00</b>	<b>996.00</b>	<b>3,868.00</b>	<b>4,023.00</b>	<b>155.00</b>	<b>4.0%</b>

# NIRPC Travel Model – VMT Validation Results

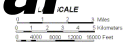
## *Vehicle Miles of Travel*

Area Type	Functional Classification	HPMS			Model			Total HPMS VMT	Total Model VMT	Difference	Percent Difference
		VMT Lake	VMT LaPorte	VMT Porter	VMT Lake	VMT LaPorte	VMT Porter				
Urban	Interstate	3,931,498	N/A	977,404	3,609,072	N/A	1,224,621	4,908,902	4,833,693	(75,209)	-1.5%
	Princ. Arterial	2,767,978	565,469	819,817	2,877,470	434,693	785,432	4,153,264	4,097,595	(55,669)	-1.3%
	Minor Arterial	1,785,440	210,624	347,419	1,754,709	186,196	304,136	2,343,483	2,245,041	(98,442)	-4.2%
	Collector	666,004	79,815	192,126	807,060	128,181	180,668	937,945	1,115,909	177,964	19.0%
	<b>Total Urban</b>	<b>9,150,920</b>	<b>855,908</b>	<b>2,336,766</b>	<b>9,048,311</b>	<b>749,070</b>	<b>2,494,857</b>	<b>12,343,594</b>	<b>12,292,238</b>	<b>(51,356)</b>	<b>-0.4%</b>
Rural	Interstate	494,929	961,961	436,735	547,294	1,233,294	474,084	1,893,625	2,254,672	361,047	19.1%
	Princ. Arterial	162,074	335,589	292,183	95,854	320,732	323,570	789,846	740,156	(49,690)	-6.3%
	Minor Arterial	70,912	461,225	237,175	112,525	458,901	255,925	769,312	827,351	58,039	7.5%
	Collector	316,609	565,459	659,373	320,133	625,596	514,880	1,541,441	1,460,609	(80,832)	-5.2%
	<b>Total Rural</b>	<b>1,044,524</b>	<b>2,324,234</b>	<b>1,625,466</b>	<b>1,075,806</b>	<b>2,638,523</b>	<b>1,568,459</b>	<b>4,994,224</b>	<b>5,282,788</b>	<b>288,564</b>	<b>5.8%</b>
<b>Total</b>		<b>10,195,444</b>	<b>3,180,142</b>	<b>3,962,232</b>	<b>10,124,117</b>	<b>3,387,593</b>	<b>4,063,316</b>	<b>17,337,818</b>	<b>17,575,026</b>	<b>237,208</b>	<b>1.4%</b>



# ***Vision 2020 - Northwest Indiana Regional Transportation Plan***

***Adopted by the  
Northwestern Indiana Regional  
Planning Commission  
February 11, 1999***



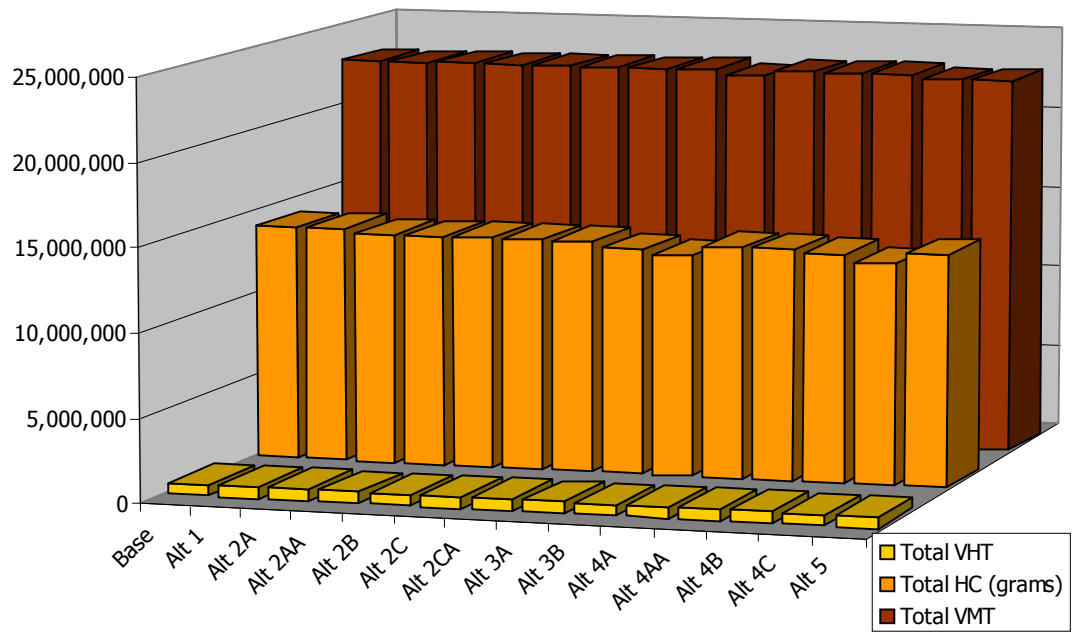
**vision 2020**  
REGIONAL TRANSPORTATION PLAN

# ***Vision 2020 Plan Development***

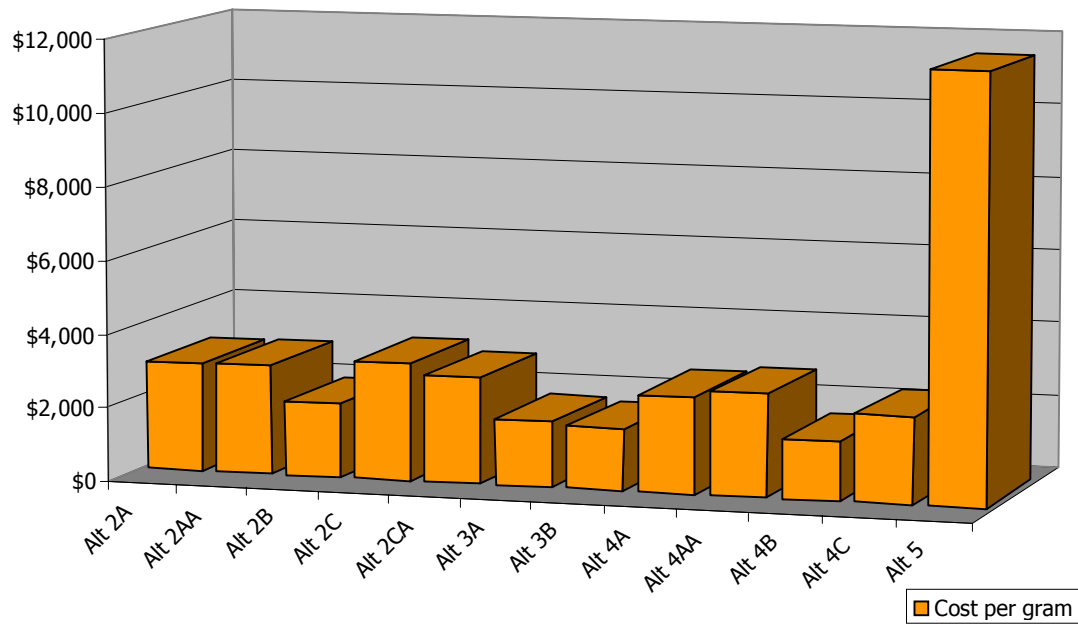
- Various alternative transportation options were analyzed and evaluated during the plan development process
- A preferred alternative transportation network was recommended based on the results of the analysis and adopted as part of the *Vision 2020* plan
- Regional economic, demographic, social and environmental conditions were evaluated in the plan development process to ensure the preferred alternative transportation network would:
  - contribute to improved mobility for people and goods;
  - reduce transportation system deficiencies;
  - decrease air quality degradation from vehicle emissions; and
  - minimize the social and environmental impacts of transportation system improvements



**Alternative Transportation Network Impacts**  
**(Regional Measures in 2020)**

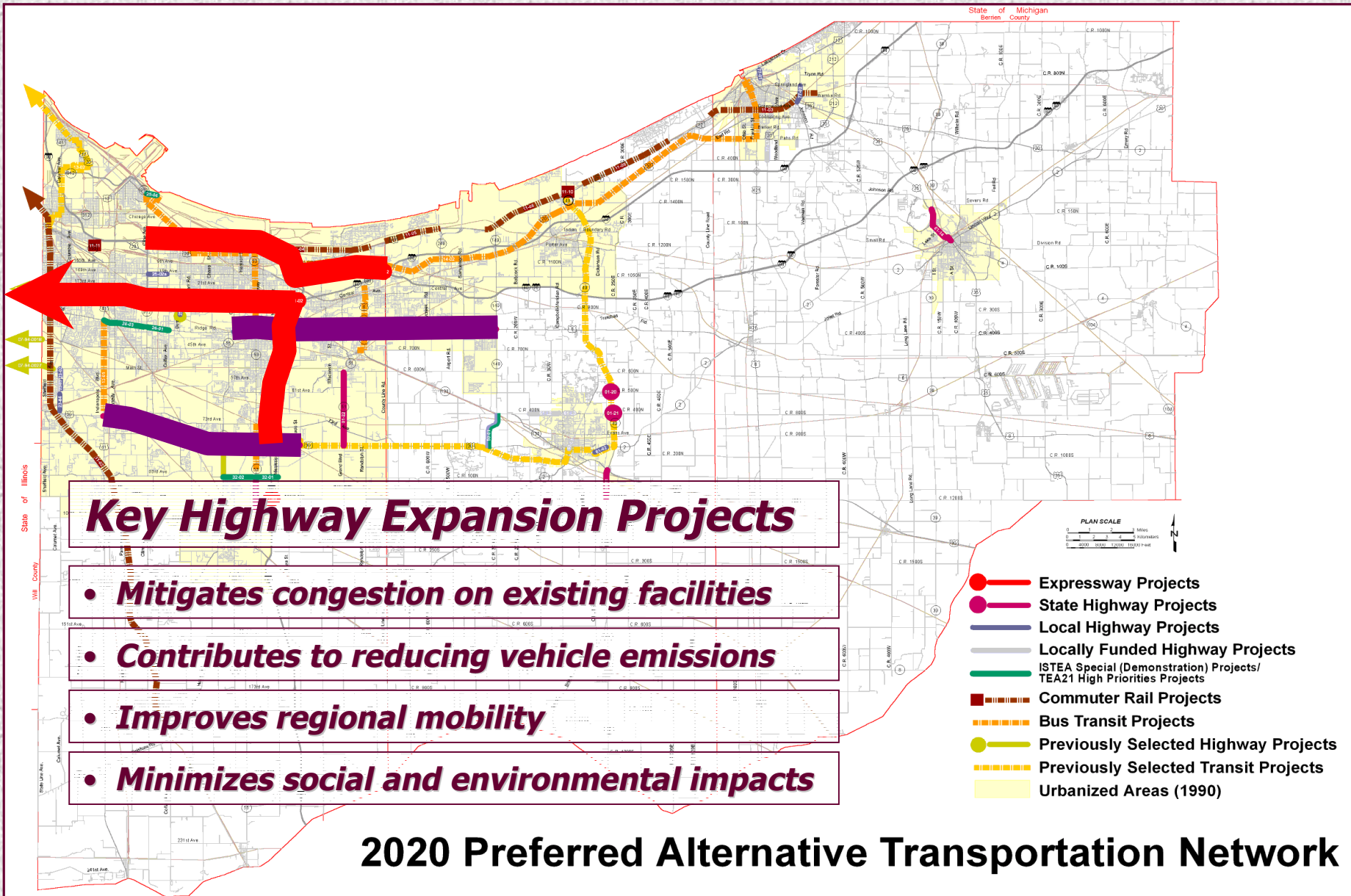


**Alternative Transportation Network Impacts**  
**(Cost per gram Hydrocarbon Reduction in 2020)**

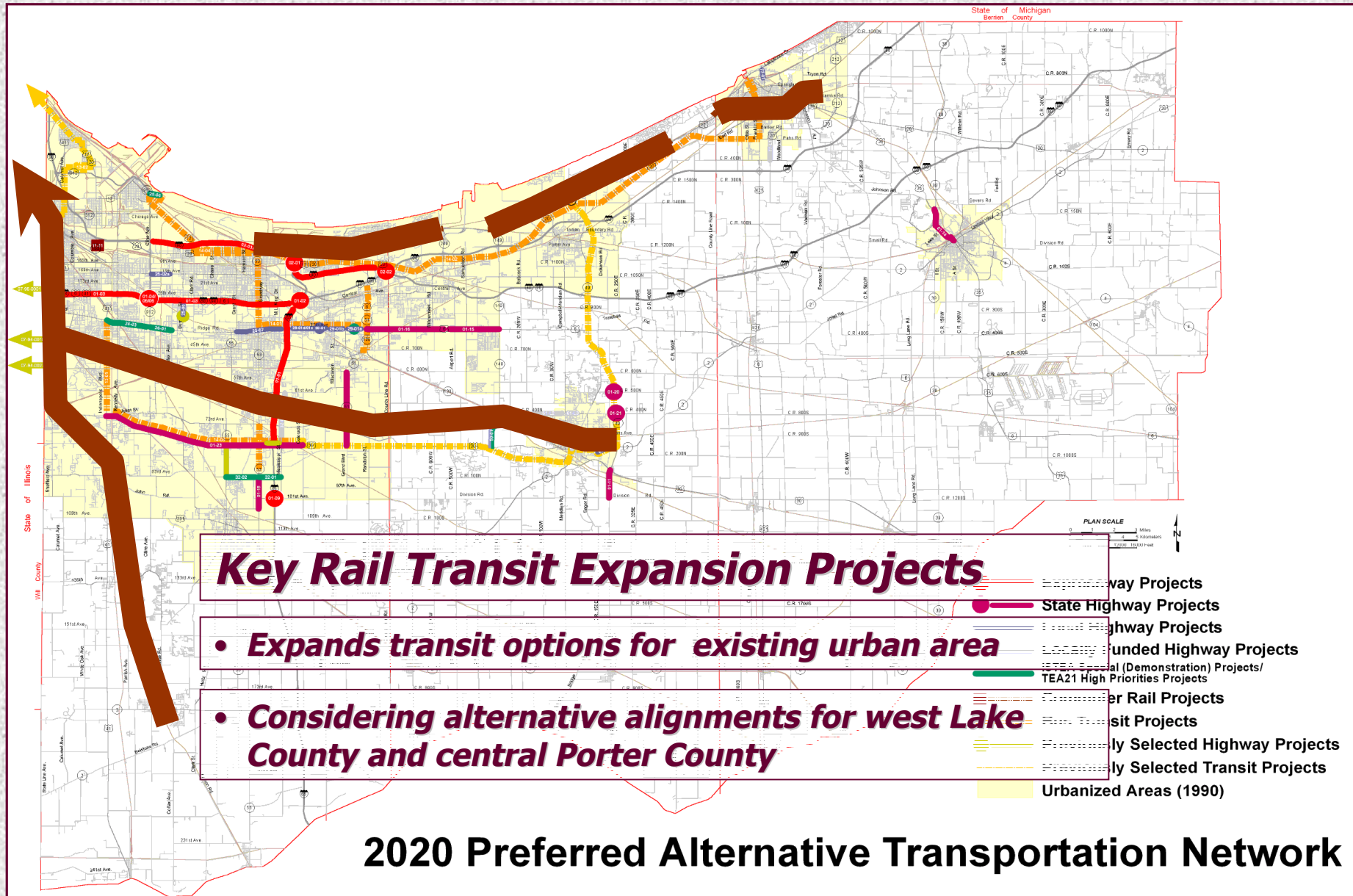




## Preferred Alternative Network

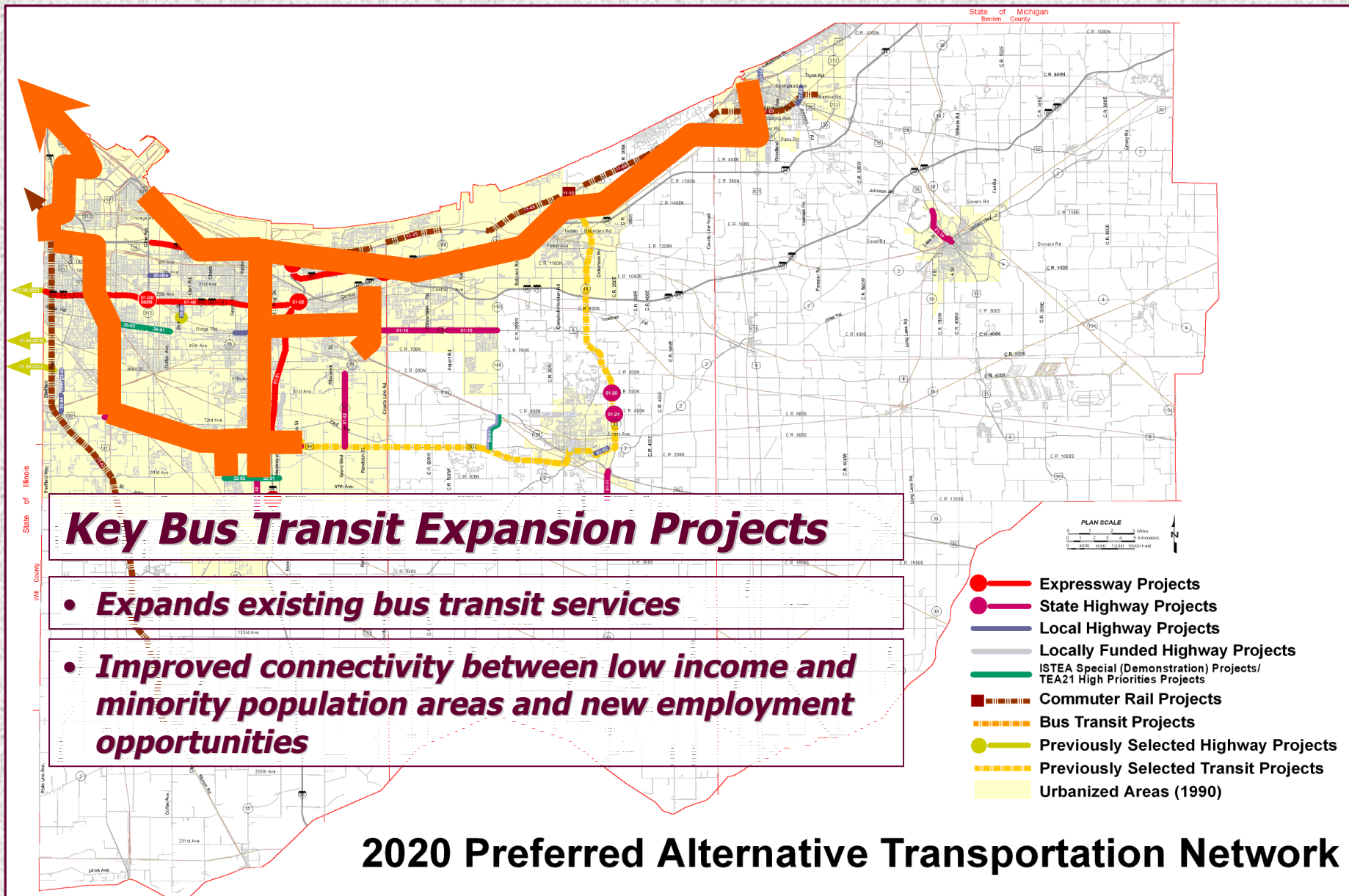


# Preferred Alternative Network



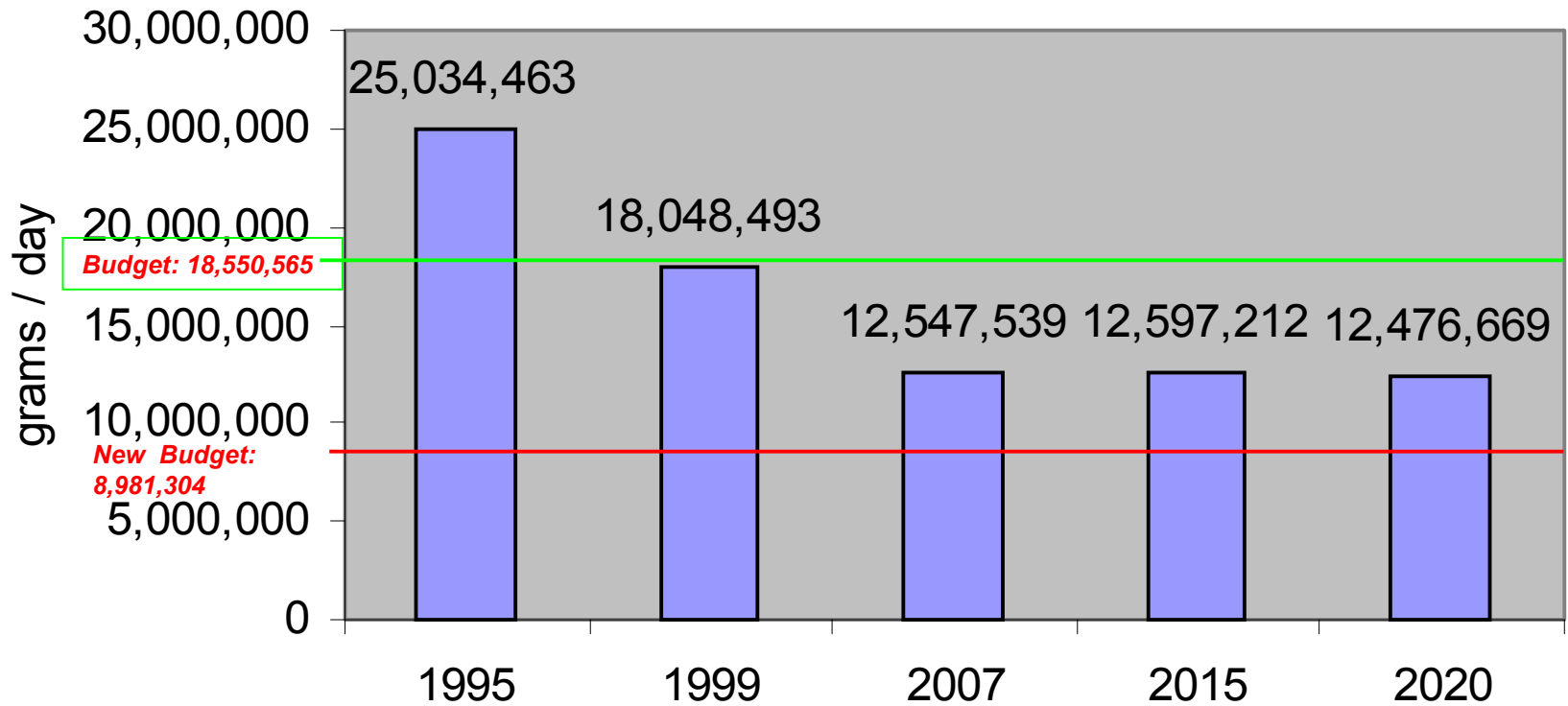


# Preferred Alternative Network



## ***Regional Emissions Analysis Results***

### ***Hydrocarbon Emissions in Lake and Porter Counties***





## VMT Estimates for 1993 - 1999

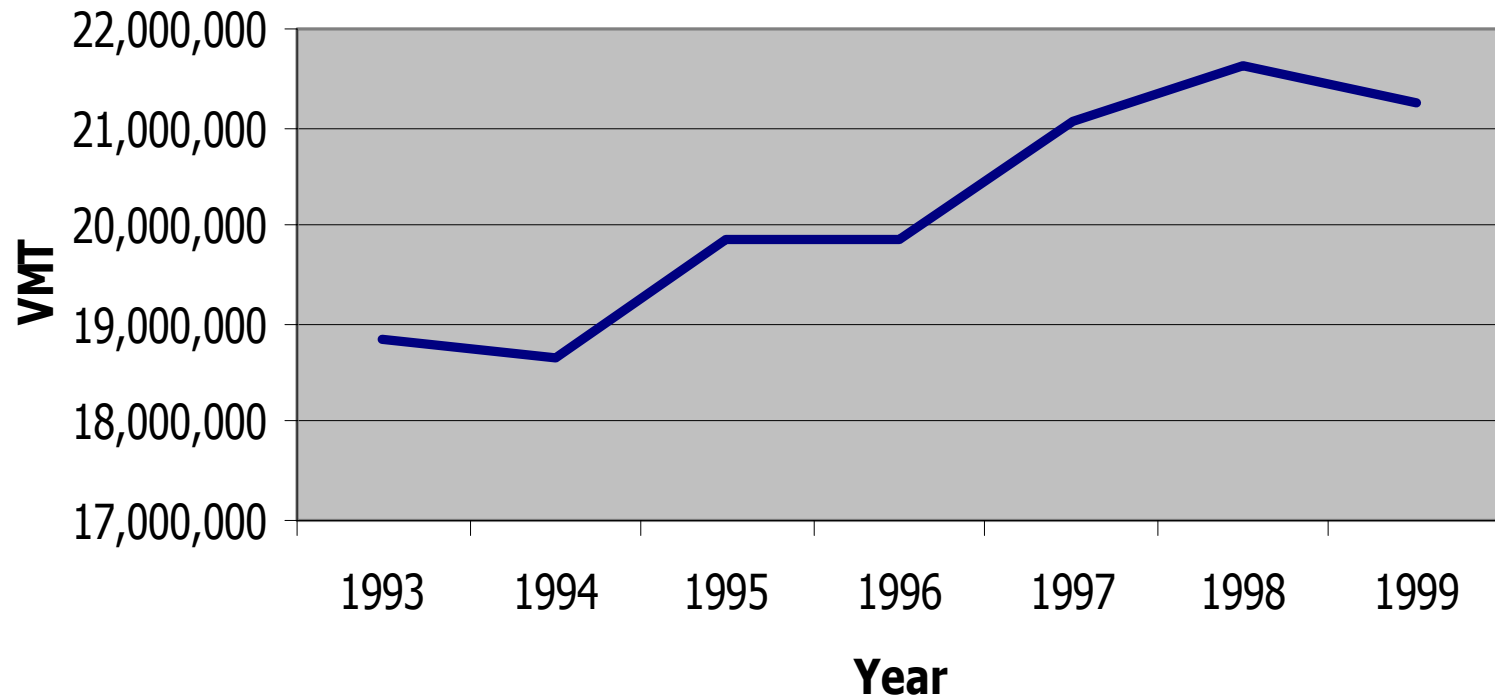
	1993	1994	1995	1996	1997	1998	1999
Lake	10822580	11098213	11876804	11952210	12689220	12990336	12495527
LaPorte	3536826	3513686	3551045	3733568	3887156	4058350	4230397
Porter	4470185	4051654	4419263	4156937	4482365	4589379	4523923
total	18,829,591	18,663,553	19,847,112	19,842,715	21,058,741	21,638,065	21,249,847

## VMT Changes NIRPC Region, 1993 - 1999

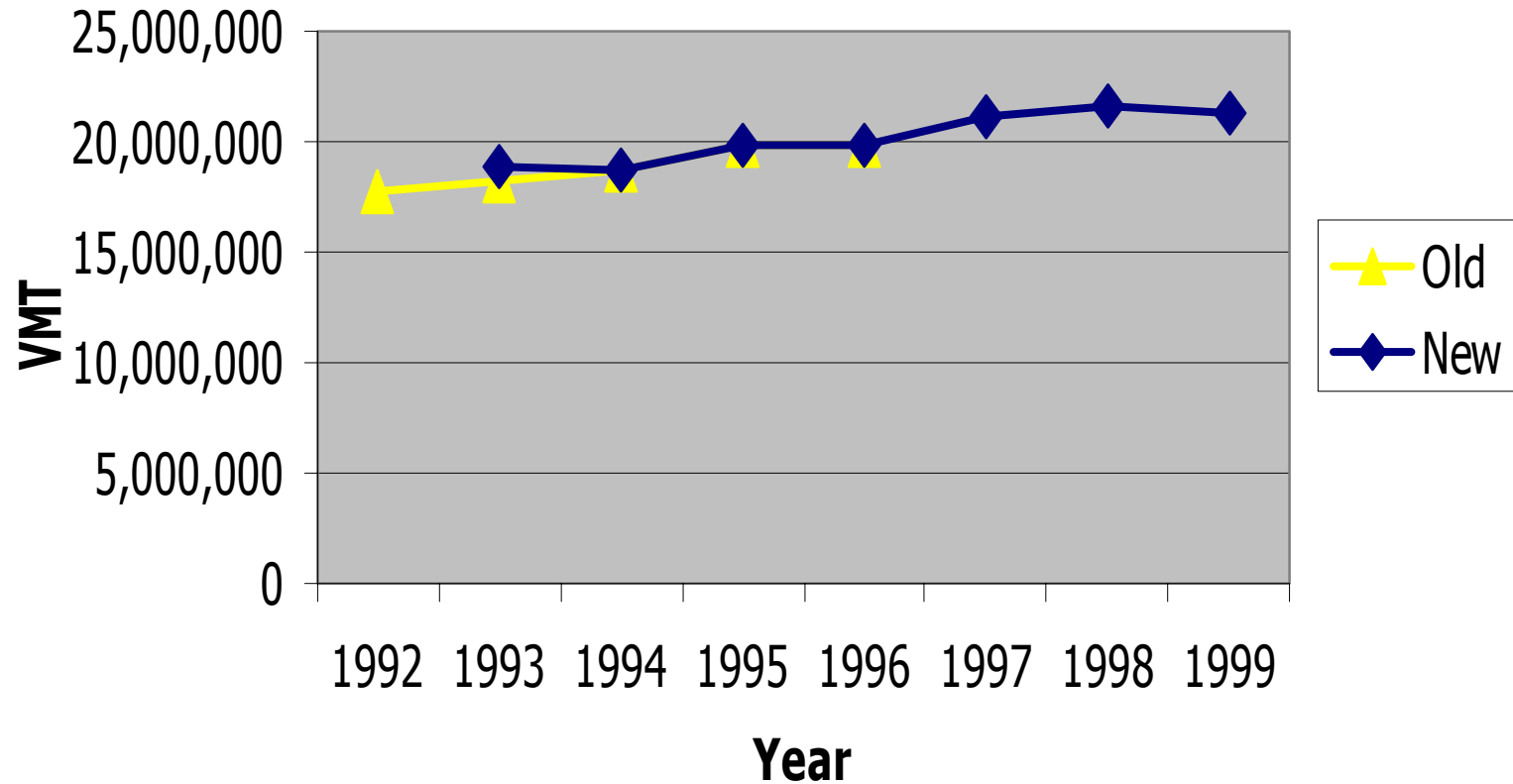
1993	1994	1995	1996	1997	1998	1999
	-0.88%	6.34%	-0.02%	6.13%	2.75%	-1.79%



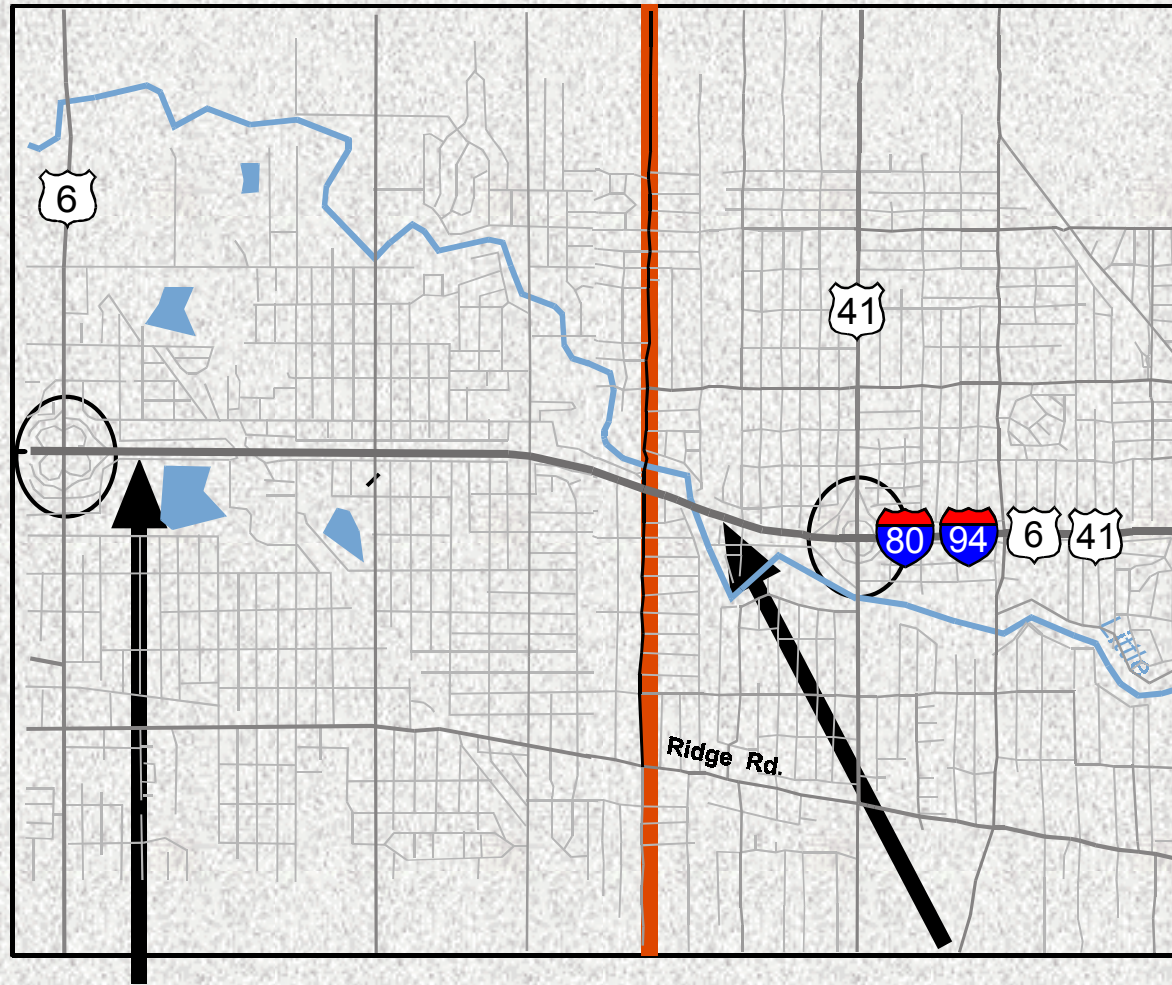
## NIRPC Region VMT



## NIRPC Region VMT







1995 AADT=139,400    1995 AADT=158,840

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